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Target Brands Inc.  
1000 Nicollet Mall, TPS-3165  
Minneapolis, MN 55403

EXAMINER
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GOLDBERG, IVAN R

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* BHARATH KUMAR RANGARAJAN,  
JAMES C. NELSON, and  
ABHISHEK SINGH VERMA

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Appeal 2015-007504  
Application 13/601,680<sup>1</sup>  
Technology Center 3600

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Before HUBERT C. LORIN, BRADLEY B. BAYAT, and  
TARA L. HUTCHINGS, *Administrative Patent Judges*.

LORIN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Bharath Kumar Rangarajan, et al. (Appellants) seek our review under 35 U.S.C. § 134 of the final rejection of claims 1–20. We have jurisdiction under 35 U.S.C. § 6(b).

SUMMARY OF DECISION

We AFFIRM.

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<sup>1</sup> The Appellants identify Target Brands, Inc. as the real party in interest. App. Br. 2.

## THE INVENTION

Claim 1, reproduced below, is illustrative of the subject matter on appeal.

1. A method of using a computing system for generating an optimized product merchandising plan determining an allocated merchandising area per product category, the method comprising:

providing at least one computer;

the at least one computer receiving user inputs defining a financial metric for each of a plurality of product categories assigned to a product department;

providing a linear regression model that forecasts responses of the financial metric for each of the product categories to endogenous variables, wherein the endogenous variables comprise historical sales per merchandising area per product category for each of a plurality of stores, and historical total sales volume for each of the plurality of stores;

using the at least one computer, generating a merchandising plan for the product department that optimizes for the combined total of the financial metric for each of the product categories for the product department in accordance with the linear regression model, the merchandising plan being within at least one user selectable constraint upon the at least one user selectable constraint being selected by a user, the at least one user selectable constraint includes one of: (i) a minimum and a maximum merchandising area and (ii) a minimum and a maximum change for a current merchandising area; and

using the at least one computer, generating an output based on the merchandising plan for the product department, wherein the output comprises changes in the current merchandising area for each of a plurality of the product categories.

(App. Br. 54, Claims App'x).

## THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Chappel	US 2002/0174005 A1	Nov. 21, 2002
Kane	US 2003/0014291 A1	Jan. 16, 2003
Klaubauf	US 2003/0200129 A1	Oct. 23, 2003
Dagum	US 2009/0210355 A1	Aug. 20, 2009

Albert van Dijk, et al., “*Similarity-Based Spatial Methods to Estimate Shelf Space Elasticities*,” 2 QUANTITATIVE MARKETING AND ECONOMICS, 257–277 (2004) (“Dijk”).

Jens Irion, et al., “*A Piecewise Linearization Framework for Retail Shelf Space Management Models*,” TECHNICAL REPORT, SCHOOL OF INDUSTRIAL AND SYSTEMS ENGINEERING, GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, GA 30332–0205 (July 9, 2004) (“Irion”).

Pierre Desmet, et al., “*Estimation of product category sales responsiveness to allocated shelf space*,” 15 INTERNATIONAL J. OF RESEARCH IN MARKETING, 443–457 (1998) (“Desmet”).

R. J. Kuo, et al., “*A decision support system for selecting convenience store location through integration of fuzzy AHP and artificial neural network*,” 47 COMPUTERS IN INDUSTRY, 199–214 (2002) (“Kuo”).

The following rejections are before us for review:

1. Claims 1–20 are rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter.
2. Claims 1, 2, 5, 6, 9–11, and 14–17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Dijk and Klaubauf.
3. Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, Irion, and Dagum.
4. Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Kane.

5. Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Chappel.
6. Claim 12 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Desmet.
7. Claim 13 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Kuo.

### ISSUES

Did the Examiner err in rejecting claims 1–20 under 35 U.S.C. § 101 as being directed to non-statutory subject matter?

Did the Examiner err in rejecting claims 1, 2, 5, 6, 9–11, and 14–17 under 35 U.S.C. § 103(a) as being unpatentable over Dijk and Klaubauf?

Did the Examiner err in rejecting claim 3 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, Irion, and Dagum?

Did the Examiner err in rejecting claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Kane?

Did the Examiner err in rejecting claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Chappel?

Did the Examiner err in rejecting claim 12 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Desmet?

Did the Examiner err in rejecting claim 13 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Kuo?

## ANALYSIS

*The rejection of claims 1–20 are rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter.*

### *Claim 1*

*Alice Corp. Proprietary Ltd. v. CLS Bank International*, 134 S. Ct. 2347 (2014) identifies a two-step framework for determining whether claimed subject matter is judicially-excepted from patent-eligibility under 35 U.S.C. § 101.

According to *Alice* step one, “[w]e must first determine whether the claims at issue are directed to a patent-ineligible concept,” such as an abstract idea. *Alice*, 134 S. Ct. at 2355.

In that regard, the Examiner determined that “[c]laim 1 has been found to be directed to an abstract idea, specifically receiving user inputs defining a financial metric, providing a linear regression model that forecasts responses of the financial metrics, generating a merchandising plan that optimizes the financial metrics, generating an output based on merchandising plan that comprises changes in a merchandising area.” Final Act. 7.

The Appellants do not dispute the Examiner’s characterization of the concept to which claim 1 is directed to. Nor do Appellants dispute that the concept the Examiner characterized claim 1 as being directed to is an abstract idea.

Rather, the Appellants argue that “this record lacks any evidence or citation to any court decision supporting the conclusory statement that what is asserted to be an abstract idea is in fact an abstract idea within the meaning of the *Alice* analysis, i.e., a fundamental truth, an original cause or

a motive. *Alice Corporation Pty. Ltd. v. CLS Bank International et al.*, 134 S. Ct. 2347, 2355 (2014).” App. Br. 14; *see also* Reply Br. 8. This is not a persuasive argument.

Notwithstanding the *Alice* Court relied, *inter alia*, on Emery, Speculation on the Stock and Produce Exchanges of the United States, in 7 Studies in History, Economics and Public Law 283, 346–356 (1896) in reaching the determination that intermediated settlement is an abstract idea, as a general matter, relying on extrinsic evidence in order to characterize the abstract nature of what claims are directed to is not mandatory. Examining earlier cases can play that role. *See Amdocs (Israel) Limited v. Openet Telecom, Inc.*, 841 F.3d 1288, 1294 (Fed. Cir. 2016) (“Instead of a definition [for what an “abstract idea” encompasses], then, the decisional mechanism courts now apply is to examine earlier cases in which a similar or parallel descriptive nature can be seen—what prior cases were about, and which way they were decided.”) Evidence may be helpful in certain situations where, for instance, facts are in dispute. But it is not always necessary. It is not necessary in this case. As the Appellants are certainly aware, the Federal Circuit has determined concepts analogous to the concept the Examiner characterized claim 1 as being directed to as being abstract ideas. *See, e.g., OIP Technologies, Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362 (Fed. Cir. 2015) (“claim 1 has the following relevant limitations: (1) testing a plurality of prices; (2) gathering statistics generated about how customers reacted to the offers testing the prices; (3) using that data to estimate outcomes (i.e. mapping the demand curve over time for a given product); and (4) automatically selecting and offering a new price based on the estimated

outcome;” that is, claim 1 is “directed to the concept of offer-based price optimization”, an abstract idea). *See also eResearchTechnology, Inc. v. CRF, Inc.*, 186 F. Supp. 3d 463 (W. D. Pa., 2016), *aff’d*, 2017 WL 1033672 (Mem) (Fed. Cir. 2016) (“obtaining data, generating an algorithm by quantitative analysis, and translating said algorithm into a more useful rule” is an abstract idea).

We have considered all of the Appellants’ remaining arguments as to the *Alice* step 1 determination and have found them unpersuasive.

Accordingly, we are unpersuaded as to error in the Examiner’s determination that claim 1 is directed to an abstract idea.

Step two is “a search for an ‘inventive concept’—*i.e.*, an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Alice*, 134 S. Ct. at 2355 (quoting *Mayo*, 566 U.S. at 72–73).

In that regard, the Examiner determined that

in this claim, there is no element or combination of elements in the claims that are sufficient to ensure that the claims amount to significantly more than the abstract idea itself. The claim fails to recite any improvements to another technology or technical field, improvements to the functioning of the computer itself, and/or meaningful limitations beyond generally linking the use of an abstract idea to a particular environment. Claim 1 is directed to a “computing system” for performing the method steps in only the preamble and this limitation adds nothing of substance to the underlying abstract idea.

Final Act. 8.



Argument 1. “Appellant[s] respectfully submit[] that an invention that is both novel and unobvious clearly and unequivocally involves an ‘inventive concept.’” App. Br. 9. That is not true.

A finding of novelty or nonobviousness does not necessarily lead to the conclusion that subject matter is patentable eligible. “Groundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry.” *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2117 (2013).

Indeed, “[t]he ‘novelty’ of any element or steps in a process, or even of the process itself, is of *no relevance* in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.” *Diamond v. Diehr*, 450 U.S. 175, 188–89 (1981) (emphasis added); *see also Mayo*, 132 S. Ct. at 1303–04 (rejecting “the Government’s invitation to substitute §§ 102, 103, and 112 inquiries for the better established inquiry under § 101”). Here, the jury’s general finding that Symantec did not prove by clear and convincing evidence that three particular prior art references do not disclose all the limitations of or render obvious the asserted claims does not resolve the question of whether the claims embody an inventive concept at the second step of *Mayo/Alice*.

*Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1315 (Fed. Cir. 2016).

Argument 2. “Appellant[s] further respectfully submit[] that legal error exists as the 101 rejections in this application were applied without consideration of novelty or non-obviousness of the inventions set forth in the appealed claims.” App. Br. 9; *see also* Reply Br. 1–7. We disagree.

The Appellants emphasize that the Examiner stated that

[t]he issue, after determination of an abstract idea, is whether ‘significantly more’ is recited. Here, there is not ‘significantly more.’

*. . . Whether or not prior [art] is applied has no bearing on whether a 101 rejection can be made.*

Final Act. 4, (emphasis added). The Examiner’s statements are consistent with the law. Claim limitations found to be novel and/or nonobvious can affect a patent-eligibility determination. *Cf. Ariosa Diagnostics, Inc., v. Sequenom, Inc.*, 788 F.3d 1371 (Fed. Cir. 2015) (“For process claims that encompass natural phenomenon, the process steps are the additional features that must be new and useful.”) Thus, novelty is a factor to be considered when determining “whether the claims contain an ‘inventive concept’ to ‘transform’ the claimed abstract idea into patent-eligible subject matter.” *Ulramercial, Inc. v. Hutu, LLC*, 772 F.3d 709, 715 (Fed. Cir. 2014). But the question under step two (“novelty in implementation of the idea is a factor to be considered only in the second step of the Alice analysis.” *Id.*) of the *Alice* framework is not whether an additional feature is novel but whether the implementation of the abstract idea involves “more than the performance of ‘well-understood, routine, [and] conventional activities previously known to the industry.’” *Content Extraction and Transmission LLC v. Wells Fargo Bank, Nat. Ass’n*, 776 F.3d 1343, 1347–48 (Fed. Cir. 2014) (quoting *Alice*, 134 S. Ct. at 2359). *See also Rapid Litig. Mgmt. Ltd. v. CellzDirect, Inc.*, 827 F.3d 1042, 1052 (Fed. Cir. 2016) (“P]atent-eligibility does not turn on ease of execution or obviousness of application. Those are questions that are examined under separate provisions of the Patent Act.” (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 90 (2012))).

Argument 3.

Appellant[s] further note[] that the following steps of Claim 1 individually and/or collectively include an inventive concept:

the at least one computer receiving user inputs defining a financial metric for each of a plurality of product categories assigned to a product department;

providing a linear regression model that forecasts responses of the financial metric for each of the product categories to endogenous variables, wherein the endogenous variables comprise historical sales per merchandising area per product category for each of a plurality of stores, and historical total sales volume for each of the plurality of stores;

using the at least one computer, generating a merchandising plan for the product department that optimizes for the combined total of the financial metric for each of the product categories for the product department in accordance with the linear regression model, the merchandising plan being within at least one user selectable constraint upon the at least one user selectable constraint being selected by a user, the at least one user selectable constraint includes one of: (i) a minimum and a maximum merchandising area and (ii) a minimum and a maximum change for a current merchandising area; and

using the at least one computer, generating an output based on the merchandising plan for the product department, wherein the output comprises changes in the current merchandising area for each of a plurality of the product categories.

App. Br. 24.

This argument is unpersuasive. The Appellants reproduce *supra* nearly all of claim 1 and then argue that “this is not a case where the claims simply state the abstract idea while adding the words ‘apply it to a computer’

or ‘a case where the claims simply append conventional steps to a computer specified at a high level of generality.’” App. Br. 25. Setting aside that this argument is another way of arguing that “the computer implemented method of Claim 1 is admittedly novel and as established below is unobvious” (*id.*) which we have previously addressed, we do not see, and the Appellants have not explained, what elements or combination of elements claim 1 provides that is “significantly more” than the abstract idea. The Examiner articulated the concept that he determined claim 1 to be directed to and that he determined to be an abstract idea, neither of which the Appellants have persuasively disputed. What does claim 1 provide that is “significantly more” than that concept? Reproducing claim 1 is not a sufficient answer. In our view, claim 1 describes a combination of an abstract idea, albeit the particular scheme claim 1 describes is described at lower level of abstraction than the concept the Examiner articulated claim 1 as being directed to, and a generic computer. There can be no dispute that claim 1 simply recites using a “computer” which reasonably broadly covers employing a generic computer to perform the scheme as claimed. *See* Specification, ¶ 25 (“desktop computers, tablet computers, laptop computers, smartphones, or other portable, non-portable, or mobile devices”). “[T]he use of a computer in an otherwise patent-ineligible process for no more than its most basic function—making calculations or computations—fails to circumvent the prohibition against patenting abstract ideas and mental processes.” *Bancorp Services, L.L.C. v. Sun Life Assur. Co. of Canada (U.S.)*, 687 F.3d 1266, 1278 (Fed. Cir. 2012).

We have considered all of the Appellants' remaining arguments as to the *Alice* step 2 determination and have found them unpersuasive.

Accordingly, we are unpersuaded as to error in the Examiner's determination that claim 1 does not include "significantly more" than the abstract idea itself.

Accordingly, the Examiner's conclusion that "because there are no meaningful limitations in the claim to transform the exception into a patent eligible application such that the claim amounts to "significantly more" than the exception itself, the claim is rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter" has not been shown to be in error and thus, the rejection is sustained. (Final Act. 8).

Claim 1 is an independent method claim. The other independent claims on appeal, claims 15 and 18, are apparatus and article claims, respectively, and they parallel claim 1. The Examiner takes the same position as to claims 15 and 18 that he has taken with respect to claim 1. *See* Final Act. 9–11.

The Appellants discuss claim 15 (App. Br. 25–27) and claim 18 (App. Br. 17–19), but these arguments are the same as those challenging the rejection of claim 1. For the reasons discussed above, we find the arguments unpersuasive as to error in the rejection of claims 15 and 18, and therefore, their rejection is sustained.

Claims 2–14 depend from claim 1; claims 16 and 17 depend from claim 15; and claims 19 and 20 depend from claim 18. We have reviewed the arguments made in the Appeal Brief: App Br. 27–28 (claim 2); App. Br. 28–29 (claim 3); App. Br. 21–23 (claim 4); App. Br. 29–30 (claim 5); App.

Br. 30–31 (claim 6); App. Br. 31 (claim 7); App. Br. 32 (claim 8); App. Br. 32–33 (claim 9); App. Br. 33–34 (claim 10); App. Br. 34–35 (claim 11); App. Br. 35 (claim 12); App. Br. 35–36 (claim 13); App. Br. 36–37 (claim 14); App. Br. 37–38 (claim 16); App. Br. 38–39 (claim 17); App. Br. 19–20 (claim 19); and App. Br. 20–21 (claim 20). For each claim, the same argument is raised; that is, the Examiner did not separately consider every claim. And yet the Appellants concede that the Examiner “rejected [each claim] based on the same rationale [used in rejecting the corresponding independent claim], wherein the language does not recite ‘significantly more’ than the abstract idea” (e.g., Final Act. 10 for claims 16–17). The Appellants do not explain what more is needed to be said. Where all claims are directed to the same abstract idea, “addressing each claim of the asserted patents . . . [is] unnecessary.” *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n*, 776 F.3d 1343, 1348 (Fed. Cir. 2014). Novelty and evidentiary arguments (*see, e.g.*, App. Br. 21 (for claim 20) and App. Br. 22 (for claim 4), respectively) are also repeated. They are unpersuasive as to error in the rejection for the reasons already discussed. We have considered all of the Appellants’ remaining arguments as to the rejection of the dependent claims and have found them unpersuasive. Their rejection is sustained.

*The rejection of claims 1, 2, 5, 6, 9–11, and 14–17 under 35 U.S.C. § 103(a) as being unpatentable over Dijk and Klaubauf.*

All the claims require “providing a linear regression model that forecasts responses of the financial metric for each of the product categories to endogenous variables, wherein the endogenous variables comprise

historical sales per merchandising area per product category for each of a plurality of stores, and historical total sales volume for each of the plurality of stores.” *See* independent claim 1. Claim 15, the other independent claim, has a similar limitation.

The Examiner finds that “Dijk discloses predicting changes in sales due to changes in shelf space (See pg. 271 )” but does not disclose providing a linear regression model as claimed, relying instead on Klaubauf (§ 89).  
Final Act. 14–15.

The difficulty with the rejection, as the Appellants have argued (*see e.g.*, App. Br. 42), is that Dijk is concerned with allocating shelf space to brands based on certain factors and Klaubauf is concerned with “factors to predict not only how shelf space allocation and promotions will increase sales of the promoted product, but how they will affect sales of other products as well, including products in other categories or products from other manufacturers or products that might not seem related at first glance” (Klaubauf § 82). How modifying Dijk to employ Klaubauf’s linear regression model for allocating shelf space to affect sales would lead one of ordinary skill in the art to provide a linear regression model that forecasts responses of a financial metric for each of a plurality of product categories assigned to a product department to endogenous variables as claimed is not adequately explained. The Examiner appears to equate the claim phrase “financial metric” with changes of sales resulting from shelf space adjustments. *See* Final Act. 12 (“changes in sales is a metric that is financially related”). In addition, the Examiner notes that

Appellants’ Specification gives an example of a plan as being  
“the physical arrangement of all these products in a store.” *See*

paragraph 0002, 0043 as filed/published. Dijk is directed to the same type of “plan” -in that it discloses solving the issue of how shelf space is allocated (See e.g. pg. 274-275 ; Final Rejection pg. 12-13).

Ans. 12. This would explain why one of ordinary skill in the art would modify Dijk to employ Klaubauf’s linear regression model to affect sales through shelf space allocation. But that does not address all that is claimed. Claim 1 further requires the linear regression model to *forecast responses* of a financial metric for each of a plurality of product categories assigned to a product department *to certain endogenous variables*, which comprise historical sales per merchandising area per product category for each of a plurality of stores, and historical total sales volume for each of the plurality of stores.” How Dijk and Klaubauf would lead one to provide a linear regression model to forecast responses of a financial metric for each of a plurality of product categories assigned to a product department to the endogenous variables as claimed is not adequately explained. Because a prima facie case of obviousness has not been made out in the first instance by a preponderance of the evidence, the rejection is not sustained.

*The rejection of claim 3 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, Irion, and Dagum.*

*The rejection of claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Kane.*

*The rejection of claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Chappel.*

*The rejection of claim 12 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Desmet.*



*The rejection of claim 13 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Kuo.*

These rejections of claims variously depending from claims 1 and 15 are reversed for the same reasons as discussed above.

### CONCLUSIONS

The rejection of claims 1–20 are rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter is affirmed.

The rejection of claims 1, 2, 5, 6, 9–11, and 14–17 under 35 U.S.C. § 103(a) as being unpatentable over Dijk and Klaubauf is reversed.

The rejection of claim 3 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, Irion, and Dagum is reversed.

The rejection of claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Kane is reversed.

The rejection of claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Chappel is reversed.

The rejection of claim 12 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Desmet is reversed.

The rejection of claim 13 under 35 U.S.C. § 103(a) as being unpatentable over Dijk, Klaubauf, and Kuo is reversed.

### DECISION

The decision of the Examiner to reject claims 1–20 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED